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Memo

Date: May 23, 2014

To: Transportation, Energy, & Utilities Committee

From: Nicole Losch, Transportation Planner

Subject: Colchester Avenue / Pearl Street / Prospect Street Intersection Scoping Report Approval

BACKGROUND

In 2011 the Colchester Avenue Corridor Study was completed and the report adopted by the City Council. The 2011 report includes numerous recommendations to improve the safety and mobility for travelers along Colchester Avenue, including the need for additional scoping to identify long-term improvements to the intersection of Colchester Avenue / Pearl Street / Prospect Street.

At the request of the DPW, the Chittenden County Regional Planning Commission (CCRPC) advanced this scoping study in 2012. The study includes public and stakeholder outreach, existing and future conditions analysis, statement of the project purpose and need, assessment of alternatives, selection of a preferred alternative, and a final scoping report. The Steering Committee for this study includes representatives of the University of Vermont, Fletcher Allen Health Care, Campus Area Transportation Management Association, Chittenden County Regional Transit Authority, Local Motion, Burlington City Council, Ward 1 Neighborhood Planning Assembly, and Burlington DPW.

SCOPING STUDY DEVELOPMENT

In early 2013 several alternatives were developed, and the Steering Committee endorsed a pilot project to test one alternative as a short-term solution and possible long-term alternative. The pilot project (Figure 1) was launched in August 2013. Traffic data and observations were made in October 2013, which measured traffic operations against 2012 measurements. During the pilot project, an online survey was available from August through November 2013.

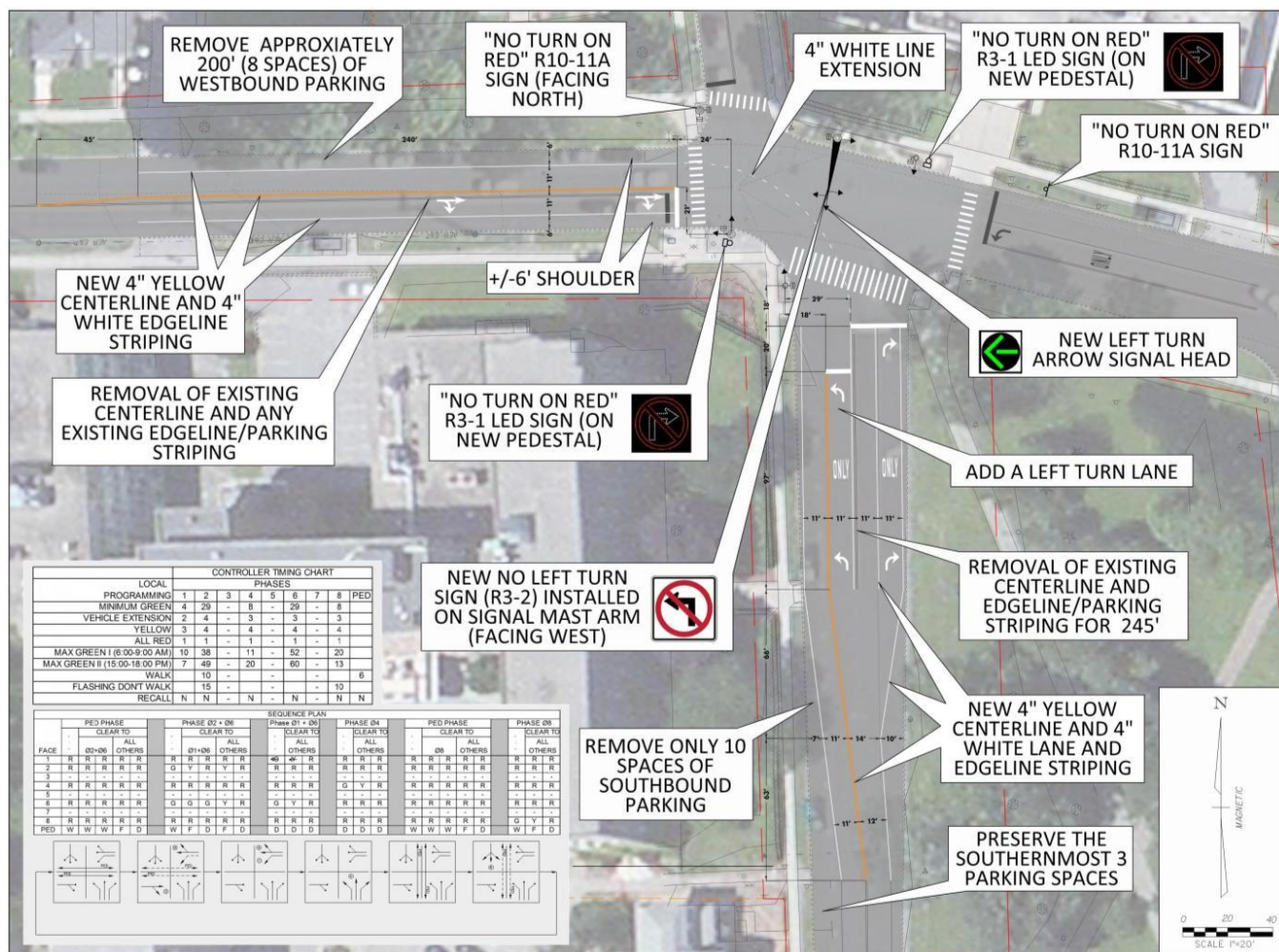
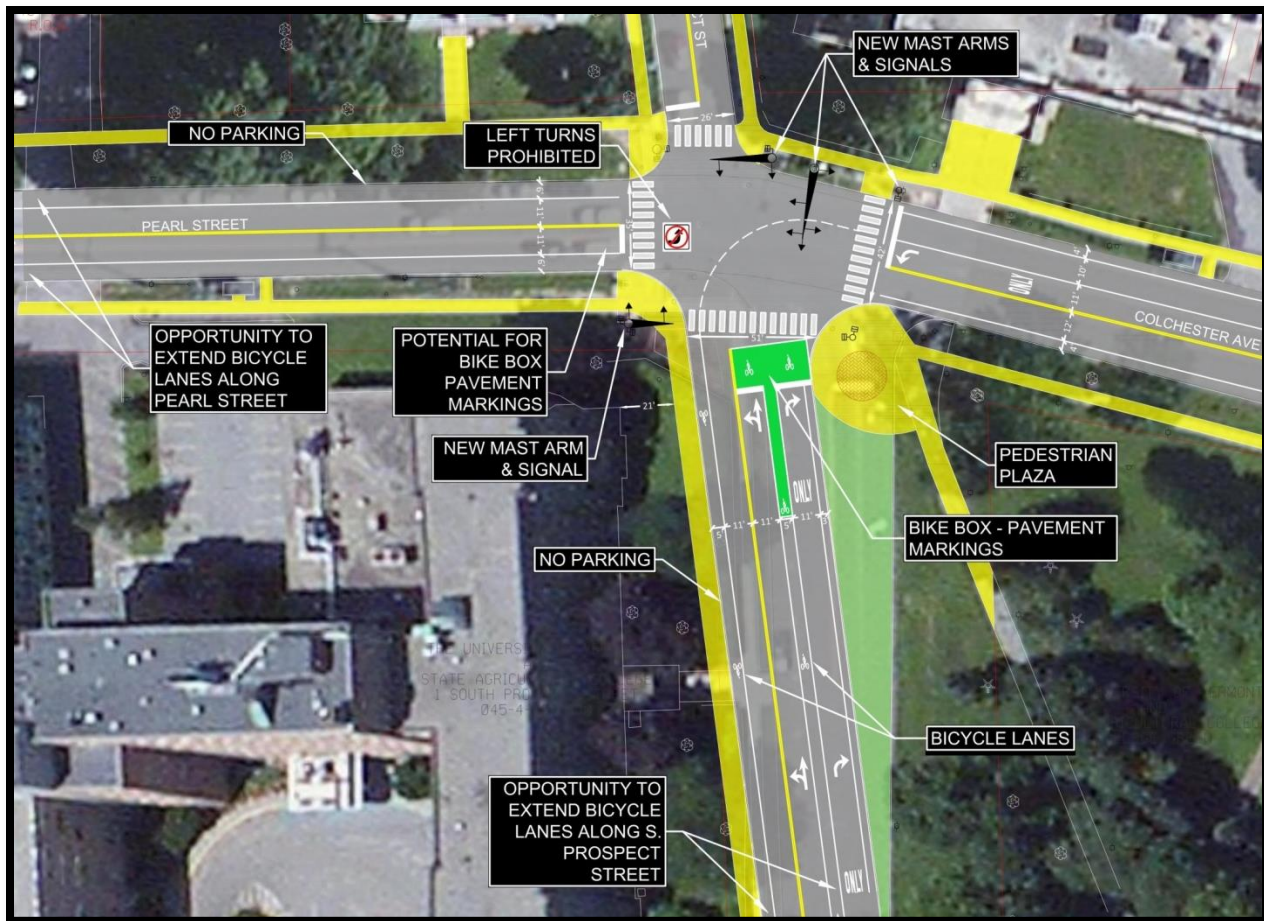


Figure 1: Pilot Project Features

Upon review of the pilot project performance metrics, the public comments, and general observations, the Steering Committee recommended the pilot improvements be made permanent. Following this recommendation, the Public Works Commission approved the traffic regulations that will effectuate the pilot treatments as a permanent configuration. Some small adjustments may be made to improve the operations, including relocation of the "No Left Turn" sign on the eastbound signal mast arm closer to the center of the lane (closer to the signal head), through-arrow pavement markings for northbound traffic, enhanced signal coordination with signals at Mansfield Avenue and Mary Fletcher Drive, and improved lighting at the southwest corner.

SCOPING STUDY RECOMMENDATIONS

The Steering Committee's final meeting was in April 2014 where the Final Alternatives were considered:



Alternative 1

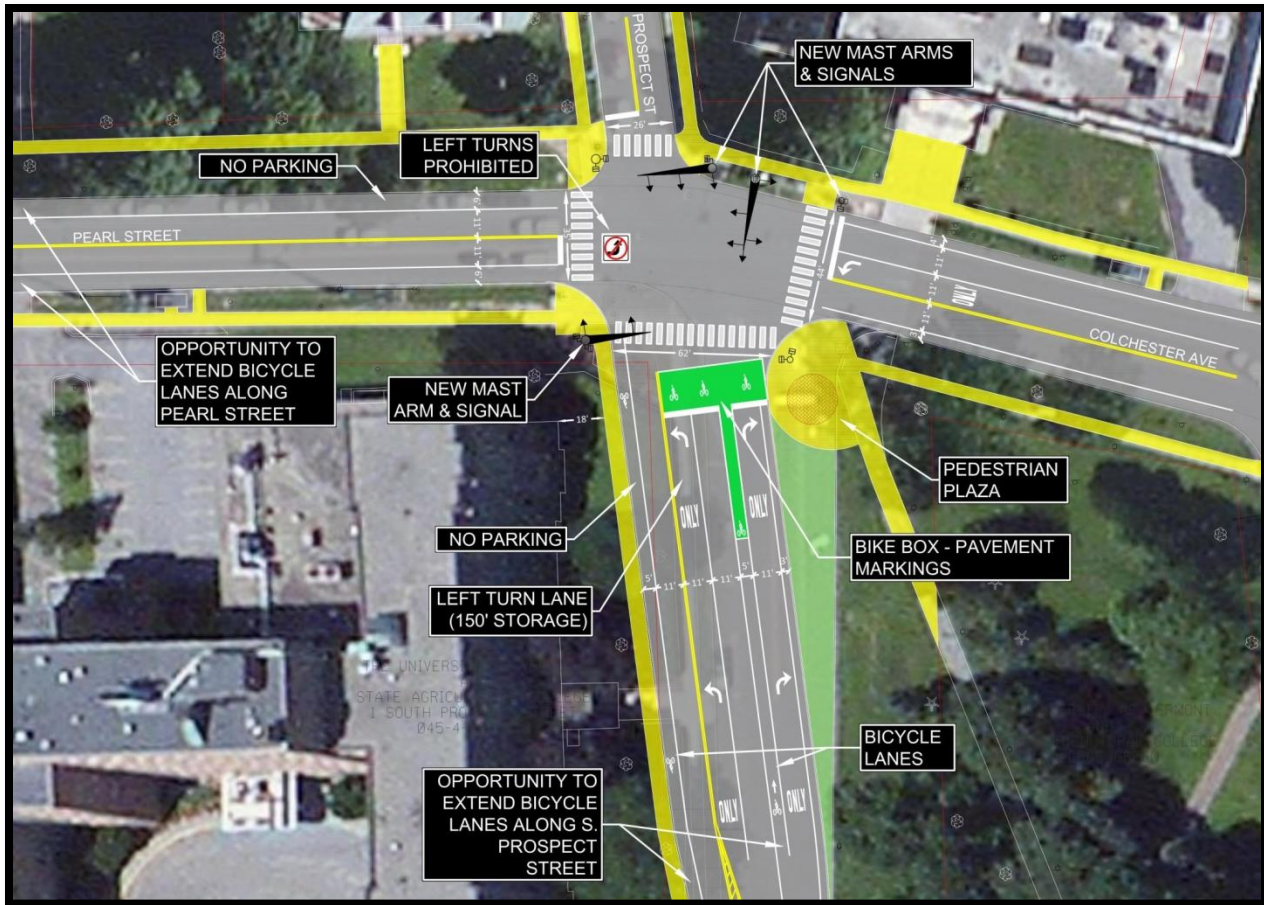
North-South Approach Alignment of Prospect Street

1A: concurrent phasing for Prospect Street approaches

1B: split phasing for Prospect Street approaches

Both 1A and 1B include the following:

1. Two northbound approach lanes on South Prospect (Through/Left and Right)
2. No parking on Pearl Street and South Prospect in front of UHC
3. Prohibited left turns from Pearl Street to North Prospect
4. Wide shoulders on Pearl Street approach
5. Bike box pavement markings for through lanes on Pearl Street
6. An opportunity to extend bicycle lanes along South Prospect Street



Alternative 2

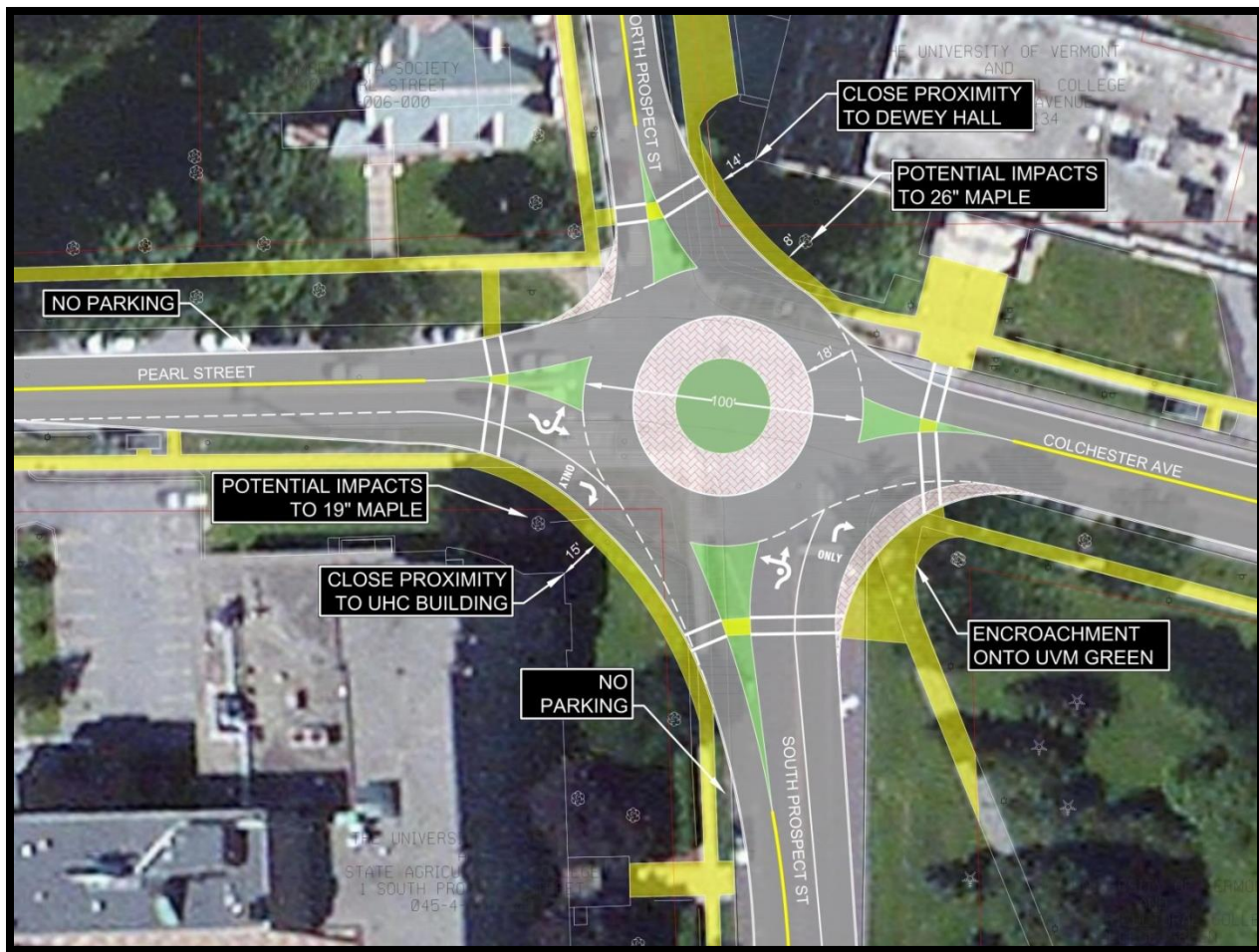
North-South Approach Alignment with Turn Lanes

2A: concurrent phasing for Prospect Street approaches

2B: split phasing for Prospect Street approaches

Both 2A and 2B include the following:

1. Three northbound approach lanes (Left-Through-Right)
2. No parking on Pearl Street and South Prospect in front of UHC
3. Prohibited left turns from Pearl Street to North Prospect
4. Wide shoulders on Pearl Street approach
5. Bike box pavement markings for through lanes on Pearl Street
6. An opportunity to extend bicycle lanes along South Prospect Street



Alternative 3 Roundabout / Mini-Roundabout

This roundabout includes a double lane for northbound and eastbound traffic due to high right-turn volumes; a single-lane is sufficient for southbound and westbound traffic.

The general feedback and deliberation by the Committee on the alternatives included:

- Concern for the balance between safety and congestion with split phasing.
- Interest in an enhanced “no build” alternative to avoid higher costs.
- Understanding that “no build” would not improve bicycle access and would not shorten pedestrian crossings.
- The crossing distance for pedestrians in Alternative 2 was concerning, but otherwise this seemed safer than Alternative 1.

Each alternative was evaluated for impacts to traffic performance, shown in Figure 2 below. The shaded areas indicate operations at a Level of Service (LOS) F, above the threshold for what might be considered an acceptable traffic performance at an urban intersection. Each alternative was also evaluated for impacts to other criteria, shown in Figure 3.

Alternatives Evaluation: Traffic Performance

Figure 2

		2022 AM Peak Hour																							
		No Build				Alt 1A				Alt 1B				Alt 2A				Alt 2B				Alt 3			
		(w/ short-term enhancements)				N-S Alignment				Alt 1A + Split Phasing				Align + Turn Lanes				Alt 2A + Split Phasing				Roundabout			
		LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c
Overall		D	38	-	0.79	B	20	-	0.72	D	39	-	0.83	C	20	-	0.69	D	39	-	0.78	C	24	-	-
EB, Pearl St		D	46	281	0.87	B	20	160	0.73	D	47	284	0.89	C	22	173	0.73	D	54	314	0.86	A	8	33	0.48
WB, Colchester Ave		C	26	296	0.80	B	15	204	0.69	C	27	328	0.83	B	16	249	0.68	C	26	167	0.78	D	40	418	0.98
NB, S Prospect St		D	39	107	0.71	C	27	113	0.86	D	39	156	0.86	C	23	65	0.60	C	33	85	0.67	A	8	70	0.24
SB, N Prospect St		D	55	182	0.89	C	25	119	0.75	E	57	192	0.90	C	26	126	0.79	E	55	194	0.86	C	24	13	0.72

		2022 PM Peak Hour																							
		No Build				Alt 1A				Alt 1B				Alt 2A				Alt 2B				Alt 3			
		(w/ short-term enhancements)				N-S Alignment				Alt 1A + Split Phasing				Align + Turn Lanes				Alt 2A + Split Phasing				Roundabout			
		LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c	LOS	Delay (s)	Avg Q. (ft)	v/c
Overall		F	119	-	0.89	D	48	-	0.89	F	101	-	0.97	D	40	-	0.75	E	75	-	0.89	F	95	-	-
EB, Pearl St		F	226	1270	0.97	E	77	503	0.90	F	173	1014	1.02	E	69	471	0.84	F	122	752	0.95	A	6	49	0.64
WB, Colchester Ave		C	24	272	0.84	B	19	231	0.78	C	25	299	0.87	B	16	210	0.72	C	24	143	0.83	F	248	1358	1.12
NB, S Prospect St		F	101	474	0.93	E	55	307	1.03	F	109	560	1.08	D	37	177	0.74	F	84	410	0.96	A	10	20	0.52
SB, N Prospect St		F	146	223	0.99	C	31	88	0.41	F	112	183	1.17	C	33	88	0.53	F	81	153	1.05	A	10	39	0.33

Alternatives Evaluation: Summary

Figure 3

Criteria:	No Build Pilot Improvements Accepted	Alternative 1 N-S Alignment	Alternative 2 Alignment + Turn Lane	Alternative 3 Roundabout
Conceptual Cost Estimate	\$0	\$935,000	\$995,000	\$730,000
Satisfies Purpose and Need				
1) Addresses Congestion	119 Seconds Delay V/C = 0.89	↑ Average delays reduced 48 seconds average delay	↑↑ Average delays & v/c reduced 40 seconds average delay	↓ Significant delays on WB approach 1.12 v/c; 1,400' queue
2a) Improves Safety for Pedestrians	--	↑ Advanced ped phases; shortened crossing distances	↔ Advanced ped phases; Longer crossing distances	↓ Difficulty crossing downstream of right- turn slip lanes. No signalized control.
2b) Improves Safety for Bicyclists	--	↑ New bike lane and bike box on South Prospect Street. Potential for bike lanes on Pearl Street.	↑ New bike lane and bike box on South Prospect Street. Potential for bike lanes on Pearl Street.	↓ Physical constraints preclude separated bicycle facility/lane through intersection
2c) Improves Safety for Vehicles	--	↑ North-South approach alignment	↑↑ North-South approach alignment; Northbound left turn lanes	↑ Roundabout reduces speeds on all approaches; minimizes crash severity
3a) Improves Pedestrian Accommodations & Safety	160' Total Ped Crossing Distance	↑ 154' Total Ped Crossing Distance	↓ 167' Total Ped Crossing Distance	↔ 180' Total Ped Crossing Distance; Only need to cross one direction at a time.
3b) Improves Bicyclist Accommodations & Safety	Bikeable shoulders on Colchester & Pearl	↑ New bike lane and bike box on South Prospect Street. Potential for bike lanes on Pearl Street.	↑ New bike lane and bike box on South Prospect Street. Potential for bike lanes on Pearl Street.	↓ Difficult to accommodate separate bicycle facility due to building constraints
4) Addresses Intersection Offset	No	↑	↑	↑
Criteria:	No Build Pilot Improvements Accepted	Alternative 1 N-S Alignment	Alternative 2 Alignment + Turn Lane	Alternative 3 Roundabout
Net Change in On-Street Parking Spaces	-18	0	-3	0
ROW Impacts	--	1,360 SF (1 Property - UVM)	3,035 SF (1 Property - UVM)	1,500 SF (2 Properties - UVM)
Tree Impacts	--	0	0	2
Environmental / Cultural Impacts		Slight potential for historic impacts	Slight potential for historic impacts	Significant potential for historic impacts
Permitting Needs	--	Potential for Section 106, 4(f); Likely Act 250, Stormwater	Potential for Section 106, 4(f); Likely Act 250, Stormwater	Likely Section 106, 4(f), Act 250, Stormwater

After deliberation, the **Steering Committee recommended Alternative 1**, revisiting split phasing versus concurrent phasing during final design and construction.

TRANSPORTATION, ENERGY AND UTILITIES COMMITTEE

We request the Transportation, Energy and Utilities Committee review the Final Alternatives, identify a preferred Alternative or support the Steering Committee's recommendation, and advance this to the City Council.

By approving the Pearl/Prospect/Colchester Intersection Scoping Report, the city is endorsing the vision and goals for the intersection and committing to pursue the Preferred Alternative.